CLAIMS:

1. An OLED device comprising:

a) an anode;

b) a first light-emitting layer disposed over the anode;

c) a second light-emitting layer disposed over the first light-emitting layer;

d) a metal-doped organic layer containing an organic electron-transporting material and a low work function metal disposed over the second light-emitting layer; and

e) a cathode disposed over the metal-doped organic layer.

2. The OLED device of claim 1 wherein the low work function metal is Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.

3. The OLED device of claim 1 wherein the second light-emitting layer includes a metal oxinoid material.

4. The OLED device of claim 1 wherein the metal-doped organic layer is disposed in contact with the second light-emitting layer.

5. An OLED device comprising:

a) an anode;

b) a first light-emitting layer disposed over the anode;

c) a second light-emitting layer disposed in contact with the first light-emitting layer;

d) a metal-doped organic layer containing an organic electron-transporting material and a low work function metal disposed over the second light-emitting layer, wherein the metal-doped organic layer is spaced in a range of

from 5 to 50 nm from the interface between the first and second light-emitting layers; and

e) a cathode disposed over the metal-doped organic layer.

6. The OLED device of claim 5 wherein the low work function metal is Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.

7. The OLED device of claim 5 wherein the second light-emitting layer includes a metal oxinoid material.

8. The OLED device of claim 5 wherein the metal-doped organic layer is spaced in a range of from 5 to 20 nm from the interface between the first and second light-emitting layers.

9. The OLED device of claim 5 wherein the metal-doped organic layer is disposed in contact with the second light-emitting layer.

10. An OLED device comprising:

a) an anode;

b) a first light-emitting layer disposed over the anode;

c) a second light-emitting layer disposed on the first light-emitting layer;

d) a metal-doped organic layer containing an organic electron transporting material and a low-work function metal disposed over the second light-emitting layer, wherein the distance between the metal-doped organic layer and the interface between the first and second light-emitting layers is selected to achieve a desired color; and

e) a cathode disposed over the metal-doped organic layer.

11. The OLED device of claim 10 wherein the low work function metal is Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.

12. The OLED device of claim 10 wherein the second light-emitting layer includes a metal oxinoid material.

13. The OLED device of claim 10 wherein the metal-doped organic layer is spaced in a range of from 5 to 20 nm from the interface between the first and second light-emitting layers.

14. The OLED device of claim 10 wherein the metal-doped organic layer is disposed in contact with the second light-emitting layer.

15. A white light-emitting OLED device comprising:

a) an anode;

b) a first light-emitting layer disposed over the anode;

c) a second light-emitting layer disposed in contact with the first light-emitting layer;

d) a third light-emitting layer disposed in contact with the second light-emitting layer;

e) a metal-doped organic layer containing an organic electron transporting material and a low work function metal disposed over the third light-emitting layer, wherein the metal-doped organic layer is spaced in a range of from 5 to 50 nm from the interface between the second and third light-emitting layers; and

f) a cathode disposed over the metal-doped organic layer, thereby emitting white light.

16. The OLED device of claim 15 wherein the low work function metal is Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.

17. The OLED device of claim 15 wherein the third light-emitting layer includes a metal oxinoid material.

18. The OLED device of claim 15 wherein the metal-doped organic layer is spaced in a range of from 5 to 20 nm from the interface between the second and third light-emitting layers.

19. The OLED device of claim 15 wherein the metal-doped organic layer is disposed in contact with the third light-emitting layer.

20. The OLED device of claim 15 including a color filter array.

21. A white light-emitting OLED device comprising:

a) an anode;

b) a first light-emitting layer disposed over the anode;

c) a second light-emitting layer disposed in contact with the first light-emitting layer;

d) a third light-emitting layer disposed in contact with the second light-emitting layer;

e) a metal-doped organic layer containing an organic electron transporting material and a low work function metal disposed over the third light-emitting layer, wherein the distance between the metal-doped organic layer and the interface between the second and third light-emitting layers is selected in order to produce the desired white light; and

f) a cathode disposed over the metal-doped organic layer.

22. The OLED device of claim 21 wherein the low work function metal is Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.

23. The OLED device of claim 21 wherein the third light-emitting layer includes a metal oxinoid material.

24. The OLED device of claim 21 wherein the metal-doped organic layer includes a metal oxinoid material.

25. The OLED device of claim 21 wherein the metal-doped organic layer is disposed in contact with the third light-emitting layer.

26. The OLED device of claim 21 including a color filter array.

27. A white light-emitting OLED device comprising:

a) an anode;

b) a first light-emitting layer disposed over the anode, wherein the first light-emitting layer contains a hole-transporting material and a light-emitting material that emits light in the yellow to red portion of the spectrum;

c) a second light-emitting layer disposed on the first light-emitting layer, wherein the second light-emitting layer contains a blue to blue-green light-emitting material that emits light in the blue to blue-green portions of the spectrum;

d) a third light-emitting layer on the second light-emitting layer, wherein the third light-emitting layer contains an electron transporting material and has a thickness in a range of from 5 to 20 nm;

e) a metal-doped organic layer containing an organic electron transporting material and a low-work function metal, disposed in contact with the third light-emitting layer; and

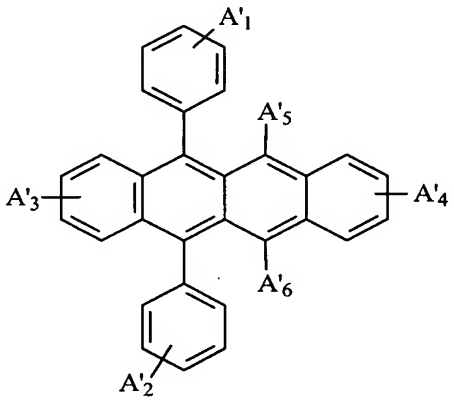
f) a cathode disposed over the metal-doped organic layer.

28. The OLED device of claim 27 wherein the low work function metal is Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.

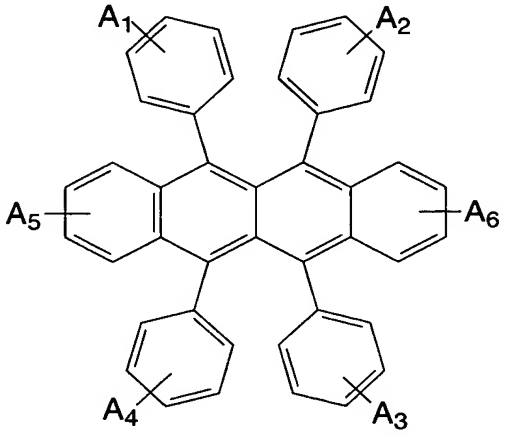
29. The OLED device of claim 27 wherein the third light-emitting layer includes a metal oxinoid material.

30. The OLED device of claim 27 wherein the metal-doped organic layer includes a metal oxinoid material.

31. The OLED device of claim 27 wherein the first light-emitting layer includes a material, or includes materials selected from



; or



wherein A_1-A_6 represent one or more substituents on each ring and where each substituent is individually selected from one of the following:

Category 1: hydrogen, or alkyl of from 1 to 24 carbon atoms;

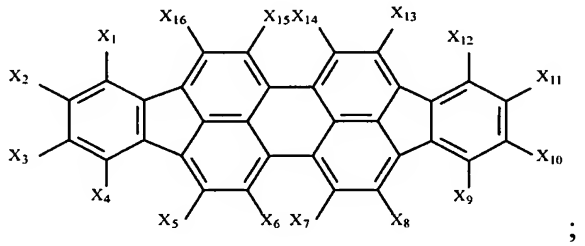
Category 2: aryl or substituted aryl of from 5 to 20 carbon atoms;

Category 3: hydrocarbon containing 4 to 24 carbon atoms, completing a fused aromatic ring or ring system;

Category 4: heteroaryl or substituted heteroaryl of from 5 to 24 carbon atoms including thiazolyl, furyl, thienyl, pyridyl, quinolinyl or other heterocyclic systems, which are bonded via a single bond, or complete a fused heteroaromatic ring system;

Category 5: alkoxylamino, alkylamino, or arylamino of from 1 to 24 carbon atoms; or

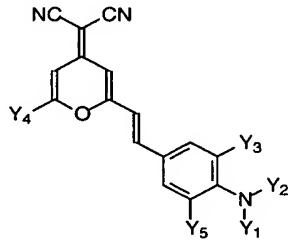
Category 6: fluoro, chloro, bromo or cyano;



;

wherein:

X_1-X_{16} are independently selected as hydro or substituents that provide red, yellow, or orange luminescence; or



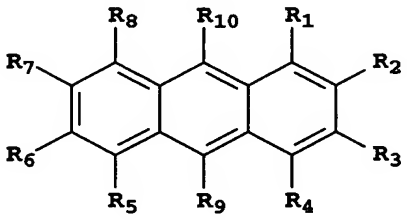
wherein:

Y_1-Y_5 represent one or more groups independently selected from hydro, alkyl, substituted alkyl, aryl, or substituted aryl; and

Y_1-Y_5 independently include acyclic groups or are joined pairwise to form one or more fused rings, provided that Y3 and Y5 do not together form a fused ring.

32. The OLED device of claim 27 wherein one or both of the second and third light-emitting layers includes an anthracene derivative as a host material.

33. The OLED device of claim 27 wherein the anthracene derivative is selected from



wherein:

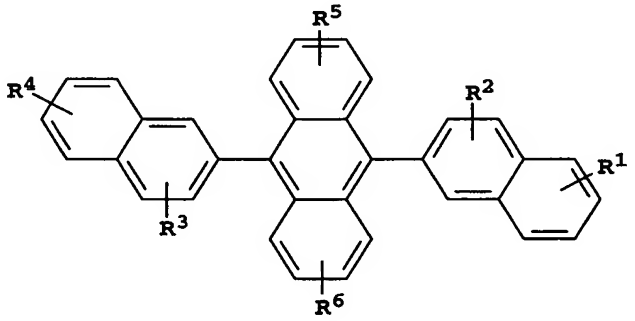
R_1-R_8 are H;

R_9 is not the same as R_{10};

R_9 is a naphthyl group having no fused rings with aliphatic carbon ring members;

R_{10} is a biphenyl group having no fused rings with aliphatic carbon ring members; and

that R_9 and R_{10} are free of amines and sulfur compounds; or



wherein R^1, R^2, R^3, R^4, R^5, and R^6 represent one or more substituents on each ring and each substituent is individually selected from the following groups:

Group 1: hydrogen, or alkyl of from 1 to 24 carbon atoms;

Group 2: aryl or substituted aryl of from 5 to 20 carbon atoms;

Group 3: carbon atoms from 4 to 24 necessary to complete a fused aromatic ring of anthracenyl, pyrenyl, or perylenyl;

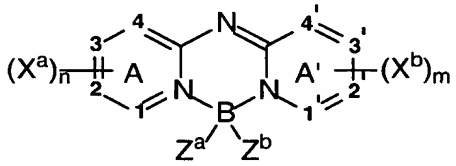
Group 4: heteroaryl or substituted heteroaryl of from 5 to 24 carbon atoms as necessary to complete a fused heteroaromatic ring of furyl, thienyl, pyridyl, quinolinyl or other heterocyclic systems;

Group 5: alkoxylamino, alkylamino, or arylamino of from 1 to 24 carbon atoms; and

Group 6: fluorine, chlorine, bromine or cyano.

34. The OLED device of claim 27 wherein the second light-emitting layer includes a blue light-emitting dopant selected from

i) a compound of the structure



wherein:

A and A' represent independent azine ring systems corresponding to 6-membered aromatic ring systems containing at least one nitrogen;

$(X^a)_n$ and $(X^b)_m$ represent one or more independently selected substituents and include acyclic substituents or are joined to form a ring fused to A or A';

m and n are independently 0 to 4;

Z^a and Z^b are independently selected substituents;

1, 2, 3, 4, 1', 2', 3', and 4' are independently selected as either carbon or nitrogen atoms; and

that X^a, X^b, Z^a, and Z^b, 1, 2, 3, 4, 1', 2', 3', and 4' are selected to provide blue luminescence; and

ii) a derivative of a distyrylbenzene or a distyrylbiphenyl that has one or more aryl amine substituents or perylene or a derivative of perylene.

35. The OLED device of claim 27 wherein the third light-emitting layer includes a green light-emitting dopant that is a quinacridone or a coumarin derivative.

36. The OLED device of claim 27 wherein one of the light-emitting layers includes a triplet emitter.

37. The OLED device of claim 27 including a color filter array.